



# Introduction to Air Conditioning Fundamentals

This is a six night series that will invest 3-hours per evening to introduce the 'big-picture' aspects of each set of topics shown below.

**Target Audience:** New technicians, designers, estimators, engineers, draftsman, project engineers or assistants - anyone who wants to gain a broader perspective.

## Day-1: Airside Fundamentals-I

1. Load Design
  - A. Human Comfort
  - B. Cooling Load Estimation
  - C. Heating Load Estimation
2. Psychrometrics
  - A. Full Load Psychrometrics

## Day-2: Airside Fundamentals-II

1. Duct Design
  - A. Press. Variations in a Duct System
  - B. Equal Friction Duct Design
  - C. Static Regain Duct Design
2. Fans & Fan Laws
  - A. Concepts
  - B. Fan Laws
  - C. Fan Types
  - D. Fan Modulation Methods
3. Acoustics
  - A. Concepts
  - B. Acoustic Rules of Thumb
  - C. Effectiveness of a Sound Barrier

## Day-3: Refrigeration Fundamentals

1. Basic Refrigeration
  - A. Basic Components
  - B. P-H Diagram (Pressure vs. Enthalpy)
  - C. P-V Diagram (Pressure vs. Volume)
  - D. Effect Of SST & SCT On Capacity
2. Refrigerant Piping
  - A. Primary Considerations
3. Refrigerants & Our Environment

## Day-4: Systems Fundamentals

1. Introduction to HVAC Systems
2. Improving Dehumidification in HVAC Systems
3. The Perfect Marriage: Ice Storage + Low Temp Air Systems
4. Commercial Building Pressurization

## Day-5: Energy Efficient Design

1. Intro & Paradigms & Why Comfort
2. Design Strategies for better Energy Efficiency
  - A. Chiller Strategies:
  - B. Airside Strategies
  - C. System Control Strategies:
  - D. Energy Recovery

## Day-6: Product Fundamentals

1. Air Handlers
2. Fan Coils
3. Unit Ventilators
4. WSHP
5. Rooftops
6. Chillers